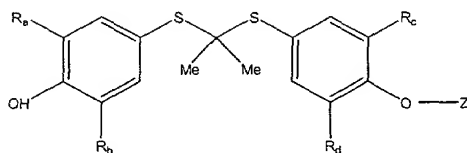


What is claimed is:

- 1) A compound of formula (I), or a pharmaceutically acceptable salt thereof:

(I)



wherein

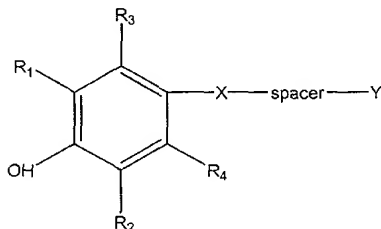
- a) R_a , R_b , R_c , and R_d are independently any group that does not adversely affect the desired properties of the molecule, including hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkaryl, substituted alkaryl, aralkyl, or substituted aralkyl; and
 - b) Z is (i) a substituted or unsubstituted carbohydrate, (ii) a substituted or unsubstituted alditol, (iii) C_{1-10} alkyl or substituted C_{1-10} alkyl, terminated by sulfonic acid, (iv) C_{1-10} alkyl or substituted C_{1-10} alkyl, terminated by phosphonic acid, (v) substituted or unsubstituted C_{1-10} alkyl-O-C(O)- C_{1-10} alkyl, (vi) straight chained polyhydroxylated C_{3-10} alkyl; (vii) $-(CR_2)_{1-6}-COOH$, wherein R is independently hydrogen, halo, amino, or hydroxy, and wherein at least one of the R substituents is not hydrogen; or (viii) $-(CR_2)_{1-6}-X$, wherein X is aryl, heteroaryl, or heterocycle, and R is independently hydrogen, halo, amino, or hydroxy.
- 2) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl.
 - 3) The compound of claim 1 wherein Z is a substituted or unsubstituted monosaccharide, disaccharide, oligosaccharide, or polysaccharide.
 - 4) The compound of claim 1 wherein Z is substituted or unsubstituted furanose or pyranose.
 - 5) The compound of claim 1 wherein Z is threose, ribulose, ketose, gentiobiose, aldose, aldotetrose, aldopentose, aldohexose, ketohexose, ketotetrose, ketopentose, erythrose, threose, ribose, deoxyribose, arabinose, xylose, lyxose, allose, altrose, glucose, mannose, gulose, idose, galactose, talose, erythrulose, ribulose, xylulose, psicose, fructose, sorbose, tagatose, dextrose, maltose, lactose, sucrose, cellulose, aldose, amylose, palatinose, trehalose, turanose, cellobiose, amylopectin,

glucosamine, mannosamine, fucose, phamnose, glucuronate, gluconate, gluconolactone, muramic acid, abequose, rhamnose, gluconic acid, glucuronic acid, or galactosamine.

- 6) The compound of claim 1 wherein Z is $-\text{CH}_2-(\text{CHOH})_3\text{CH}_2\text{OH}$.
- 7) The compound of claim 1 wherein Z is $-\text{CH}_2-(\text{CHOH})_4\text{CH}_2\text{OH}$.
- 8) The compound of claim 1 wherein Z is $-(\text{CR}_2)_{1-6}$ -sulfonic acid, and R is independently hydrogen, halo, amino, or hydroxy.
- 9) The compound of claim 1 wherein Z is substituted or unsubstituted alditol.
- 10) The compound of claim 1 wherein Z is $-(\text{CR}_2)_{1-6}$ -phosphonic acid, and R is independently hydrogen, halo, amino, or hydroxy.
- 11) The compound of claim 1 wherein Z is $-(\text{CR}_2)_{1-4}$ -phosphonic acid, and R is independently hydrogen, halo, or hydroxy.
- 12) The compound of claim 1 wherein Z is $-(\text{CHR})_{1-6}-\text{O}-\text{C}(\text{O})-(\text{CHR})_{1-6}-\text{CH}_2\text{R}$, and R is independently hydrogen, halo, amino, or hydroxy.
- 13) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is $-(\text{CR}_2)_{1-6}-\text{X}$, wherein X is aryl, heteroaryl, or heterocycle, and R is independently hydrogen, halo, amino, or hydroxy.
- 14) The compound of claim 1 wherein Z is $-\text{CH}_2-(\text{CHR}')_{1-8}-\text{CH}_2\text{R}'$, R' is independently hydrogen or hydroxy, and at least two of R' are hydroxy.
- 15) The compound of claim 1 wherein Z is $-\text{CH}_2-(\text{CHR}')_{1-6}-\text{CH}_2\text{R}'$, R' is independently hydrogen or hydroxy, and at least three of R' are hydroxy.
- 16) The compound of claim 1 wherein Z is $-(\text{CH}_2)_{0-6}-\text{CF}_2-\text{COOH}$.
- 17) The compound of claim 1 wherein Z is $-(\text{CH}_2)_{1-6}-\text{CH}(\text{NR}^1\text{R}^2)-\text{COOH}$, and R^1 and R^2 are independently hydrogen or lower alkyl.
- 18) The compound of claim 1 wherein Z is $-(\text{CR}_2)_{1-6}-\text{X}$, R is independently hydrogen, halo, amino, or hydroxy; and X is substituted or unsubstituted pyrrolidine, imidazole, pyridine, or pyrimidine.
- 19) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is 2-amino-3-carboxypropyl; 3-amino-4-carboxybutyl; 1,1-difluoro-1-carboxymethyl; phosphonomethyl; 1,1-difluoro-1-phosphono-methyl; 2-(2-carboxy-N-pyrrolidine)ethyl; (2H-imidazol-5-yl)methyl; 2-pyridylmethyl; 3-pyridylmethyl; or 5-pyrimidinylmethyl.
- 20) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is arabitol.
- 21) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is

ribofuranose.

- 22) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is 2-hydroxy-3-propyl-D-gluconate.
- 23) The compound of claim 1 wherein R_a , R_b , R_c , and R_d are t-butyl, and Z is 2-hydroxypropan-3-sulfonic acid.
- 24) A compound of formula (II) or its pharmaceutically acceptable salt:
(II)



wherein:

- a) X is O, S, SO, SO_2 , CH_2 , or NH;
 - b) spacer is $-(CH_2)_n-$, $-(CH_2)_n-CO-$, $-(CH_2)_n-NH-$, $-(CH_2)_n-O-$, $-(CH_2)_n-S-$, $-(OCH_2)-$, $-(SCH_2)-$, $-(CH_2S)-$, $-(aryl-O)-$, $-(O-aryl)-$, $-(alkyl-O)-$, $-(O-alkyl)-$, $-O-C(O)-(CH_2)_n-$, $-(CH_2)_n-C(O)-O-$, $S-C(S)-(CH_2)_n-$, $-(CH_2)_n-C(S)-S-$, $-C(O)-$, $-C(S)-$;
 - c) n is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10;
 - d) R^1 and R^2 are independently alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkaryl, or aralkyl;
 - e) R^3 and R^4 are independently any group that does not otherwise adversely affect the desired properties of the molecule, including H, halogen, or R^1 ; and
 - f) Y is aryl or heteroaryl monosubstituted by $-C(O)NR_5R_6$, wherein R_5 and R_6 are independently hydrogen or alkyl.
- 25) The compound of claim 24 wherein:
- a) -X-spacer- is $-S-CH_2-$;
 - b) R^1 and R^2 are t-butyl;
 - c) R^3 and R^4 are hydrogen; and
 - d) Y is aryl or heteroaryl monosubstituted by $-C(O)NR_5R_6$, wherein R_5 and R_6 are independently hydrogen or alkyl.
- 26) The compound of claim 24 which is 2,6-Di-tert-butyl-[4'-(N,N-

diethylaminocarbonyl)benzyl]thiophenol.

- 27) The compound of claim 24 which is 2,6-Di-tert-butyl-[4'-(N,N-dimethylaminocarbonyl)benzyl]thiophenol.
- 28) A pharmaceutical composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.
- 29) The pharmaceutical composition of claim 28 wherein Z is substituted or unsubstituted furanose or pyranose.
- 30) The pharmaceutical composition of claim 28 wherein Z is substituted or unsubstituted alditol.
- 31) The pharmaceutical composition of claim 28 wherein R_a, R_b, R_c, and R_d are t-butyl, and Z is 2-amino-3-carboxypropyl; 3-amino-4-carboxybutyl; 1,1-difluoro-1-carboxymethyl; phosphonomethyl; 1,1-difluoro-1-phosphono-methyl; 2-(2-carboxy-N-pyrrolidine)ethyl; (2H-imidazol-5-yl)methyl; 2-pyridylmethyl; 3-pyridylmethyl; and 5-pyrimidinylmethyl.
- 32) The pharmaceutical composition of claim 28 wherein R_a, R_b, R_c, and R_d are t-butyl, and Z is arabitol.
- 33) The pharmaceutical composition of claim 28 wherein R_a, R_b, R_c, and R_d are t-butyl, and Z is ribofuranose.
- 34) The pharmaceutical composition of claim 28 wherein R_a, R_b, R_c, and R_d are t-butyl, and Z is 2-hydroxy-3-propyl-D-gluconate.
- 35) The pharmaceutical composition of claim 28 wherein R_a, R_b, R_c, and R_d are t-butyl, and Z is 2-hydroxypropan-3-sulfonic acid.
- 36) A method for treating a disease or disorder mediated by VCAM-1 comprising administering to a patient a VCAM-1 inhibiting effective amount of a compound of claim 1.
- 37) The method of claim 36 wherein Z is substituted or unsubstituted furanose or pyranose.
- 38) The method of claim 36 wherein Z is substituted or unsubstituted alditol.
- 39) A method for treating a disease or disorder mediated by VCAM-1 comprising administering to a patient a VCAM-1 inhibiting effective amount of a compound of claim 24.
- 40) The method of claim 36 wherein the VCAM-1 mediated disease is an inflammatory disorder.

- 41) The method of claim 37 wherein the VCAM-1 mediated disease is an inflammatory disorder.
- 42) The method of claim 38 wherein the VCAM-1 mediated disease is an inflammatory disorder.
- 43) The method of claim 39 wherein the VCAM-1 mediated disease is an inflammatory disorder.
- 44) The method of claim 36 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 45) The method of claim 37 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 46) The method of claim 38 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 47) The method of claim 38 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 48) The method of claim 36 wherein the VCAM-1 mediated disease is a cardiovascular disease.
- 49) The method of claim 37 wherein the VCAM-1 mediated disease is a cardiovascular disease.
- 50) The method of claim 38 wherein the VCAM-1 mediated disease is a cardiovascular disease.
- 51) The method of claim 39 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 52) The method of claim 36 wherein the VCAM-1 mediated disease is an ocular disease, an autoimmune disease, a neurological disorder, or cancer.

- 53) The method of claim 37 wherein the VCAM-1 mediated disease is an ocular disease, an autoimmune disease, a neurological disorder, or cancer.
- 54) The method of claim 38 wherein the VCAM-1 mediated disease is an ocular disease, an autoimmune disease, a neurological disorder, or cancer.
- 55) The method of claim 39 wherein the VCAM-1 mediated disease is an inflammatory disorder selected from rheumatoid arthritis, osteoarthritis, asthma, dermatitis, psoriasis, organ transplantation or allograft rejection, autoimmune diabetes, and multiple sclerosis.
- 56) The method of claim 36 wherein the VCAM-1 mediated disease is a cardiovascular disease selected from atherosclerosis, post-angioplasty restenosis, coronary artery disease, angina, small artery disease, diabetes mellitus, diabetic nephropathy, and diabetic retinopathy.
- 57) The method of claim 37 wherein the VCAM-1 mediated disease is a cardiovascular disease selected from atherosclerosis, post-angioplasty restenosis, coronary artery disease, angina, small artery disease, diabetes mellitus, diabetic nephropathy, and diabetic retinopathy.
- 58) The method of claim 38 wherein the VCAM-1 mediated disease is a cardiovascular disease selected from atherosclerosis, post-angioplasty restenosis, coronary artery disease, angina, small artery disease, diabetes mellitus, diabetic nephropathy, and diabetic retinopathy.
- 59) The method of claim 39 wherein the VCAM-1 mediated disease is a cardiovascular disease selected from atherosclerosis, post-angioplasty restenosis, coronary artery disease, angina, small artery disease, diabetes mellitus, diabetic nephropathy, and diabetic retinopathy.
- 60) A method for treating hypercholesterolemia or hyperlipidemia comprising administering to a patient an effective treatment amount of a compound of claim 1.
- 61) The method of claim 60 wherein Z is furanose or pyranose.
- 62) The method of claim 60 wherein Z is substituted or unsubstituted alditol.
- 63) A method for treating hypercholesterolemia or hyperlipidemia comprising administering to a patient an effective treatment amount of a compound of claim 24.
- 64) The method of claim 56 further comprising administering a platelet aggregation inhibitor, and antithrombotic agent, a calcium channel blocker, an angiotensin converting enzyme (ACE) inhibitor, or a β -blocker.
- 65) The method of claim 57 further comprising administering a platelet aggregation

inhibitor, and antithrombotic agent, a calcium channel blocker, an angiotensin converting enzyme (ACE) inhibitor, or a β -blocker.

- 66) The method of claim 58 further comprising administering a platelet aggregation inhibitor, and antithrombotic agent, a calcium channel blocker, an angiotensin converting enzyme (ACE) inhibitor, or a β -blocker.
- 67) The method of claim 59 further comprising administering a platelet aggregation inhibitor, and antithrombotic agent, a calcium channel blocker, an angiotensin converting enzyme (ACE) inhibitor, or a β -blocker.
- 68) The method of claim 40 further comprising administering a nonsteroidal antiinflammatory, a COX-2 inhibitor, a corticosteriod, or a TNF- α modulating agent.
- 69) The method of claim 41 further comprising administering a nonsteroidal antiinflammatory, a COX-2 inhibitor, a corticosteriod, or a TNF- α modulating agent.
- 70) The method of claim 42 further comprising administering a nonsteroidal antiinflammatory, a COX-2 inhibitor, a corticosteriod, or a TNF- α modulating agent.
- 71) The method of claim 43 further comprising administering a nonsteroidal antiinflammatory, a COX-2 inhibitor, a corticosteriod, or a TNF- α modulating agent.